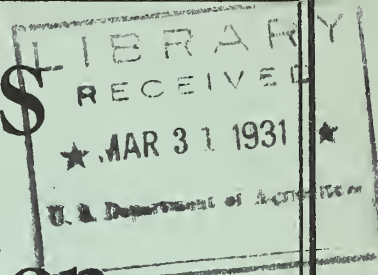


Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

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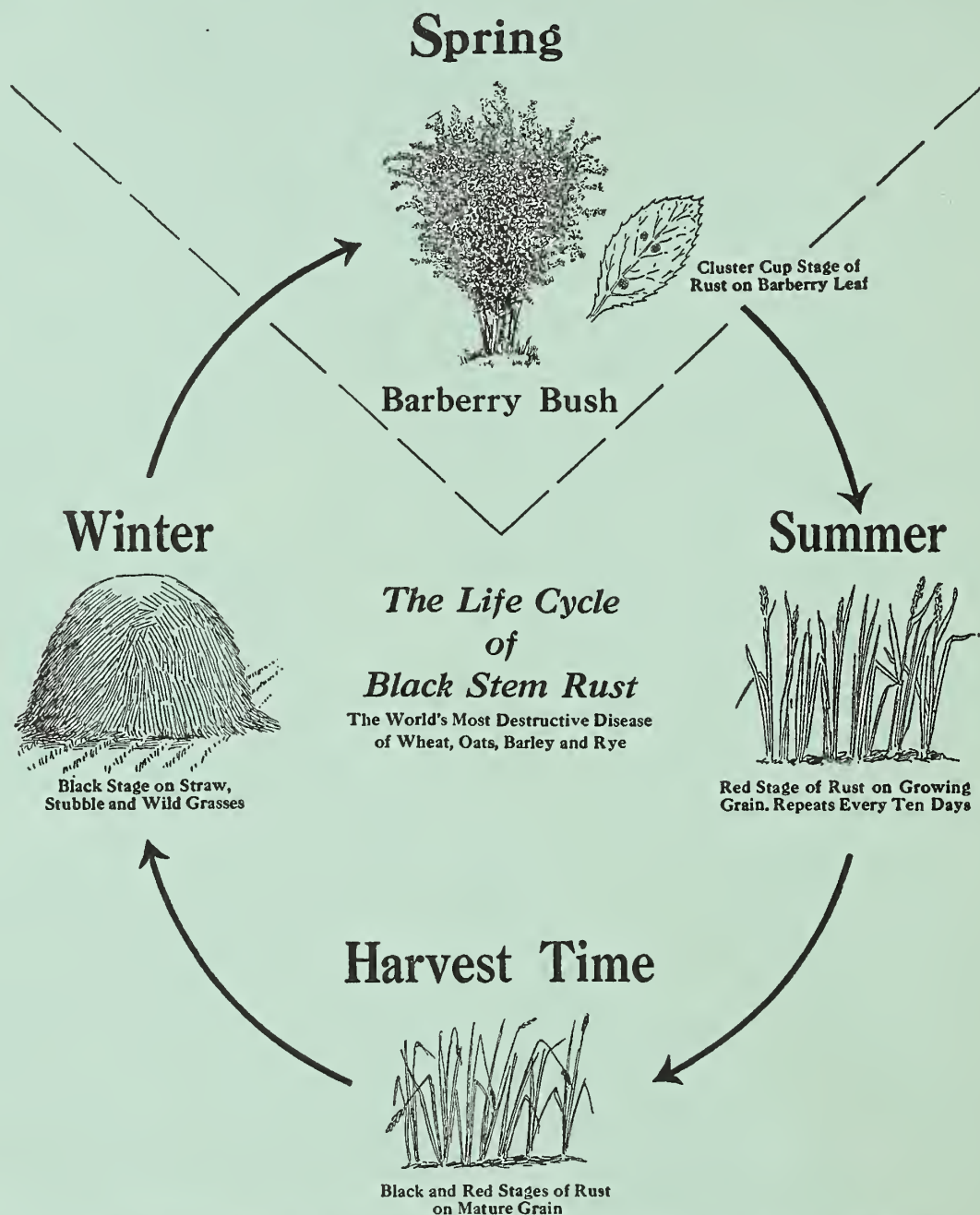
PROGRESS
of the
**Barberry Eradication
Campaign**
in
Minnesota in 1930



***Black Stem Rust Spread From This Common Barberry Bush
To Near-by Grain Fields Causing Severe Damage***

Barberry Eradication Pays

Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

**BOOST BARBERRY ERADICATION—A PRACTICAL RUST
CONTROL MEASURE**

PROGRESS OF THE BARBERRY ERADICATION CAMPAIGN

IN MINNESOTA, 1930

By Leonard W. Melander*, Associate Pathologist,
Office of Barberry Eradication, Bureau of Plant Industry,
United States Department of Agriculture.

Introduction

The purpose of the barberry eradication campaign, which is being carried on in the thirteen North-Central States, is to reduce the number and severity of destructive stem-rust epidemics, thus decreasing the average annual losses from this disease. Higher quality grain will be produced when black stem rust is under control. It definitely has been established that the common barberry must be eradicated to prevent new strains of stem rust from being produced which may attack heretofore resistant varieties of grain. Each barberry is capable of producing large quantities of seed. The fruit is eaten by birds and the seeds are scattered over the countryside. This results in a rapid increase in the number of bushes and increases the danger of severe local epidemics of stem rust. Therefore, if common barberry bushes were allowed to increase undisturbed, they would eventually become so numerous that the growing of wheat, barley, rye, and oats would prove unprofitable.

For the years 1915 to 1922 inclusive, the average annual loss from stem rust of wheat in Minnesota was approximately 19.8 per cent. In the years 1923 to 1930 inclusive, the average annual loss was approximately 11.5 per cent. This reduction of 8.3 per cent is proof of the effectiveness of the rust control measures now being employed. Since 1918, approximately a million bushes, sprouting bushes, and seedlings have been destroyed in

*Leader of Barberry Eradication in Minnesota.

Minnesota. The destruction of this large number of barberry bushes has been an important factor in the reduction of the number of local epidemics of stem rust. One of the most obvious effects of barberry eradication is the definite relation it has had to the control of stem rust of rye. In practically all cases where rye is found heavily infected with stem rust, the infected barberry bushes were found near-by.

Survey Activities

During 1930, survey and eradication work consisted of an intensive survey of parts of Scott, Rice, and Dakota Counties, and the resurvey of Mower and parts of Fillmore Counties. This intensive survey consisted of a careful inspection of every place where a shrub may grow. The aim of the first or preliminary survey was to destroy the largest number of barberry bushes in the shortest possible time. This was a logical procedure at the beginning of the campaign because the eradication of large numbers of fruiting bushes prevented further seed production. In addition, many local sources of stem rust were eliminated.

The problem of finding and destroying scattered bushes in woodlots and other places requires an intensive survey.

Resurvey is an activity designed to keep common barberry bushes from becoming established in localities from which they have previously been eradicated. In addition, near-by properties are searched for new bushes which may have developed from seeds scattered by birds and other agencies.

The conditions for survey during 1930 were unusually good. Practically no time was lost as a result of unfavorable weather. Second survey of Scott County was completed. The survey of Dakota and Rice Counties was started and will be completed in 1931, if present plans materialize. The resurvey of Mower and Fillmore Counties was completed. More barberry bushes escaped from cultivation have been found in

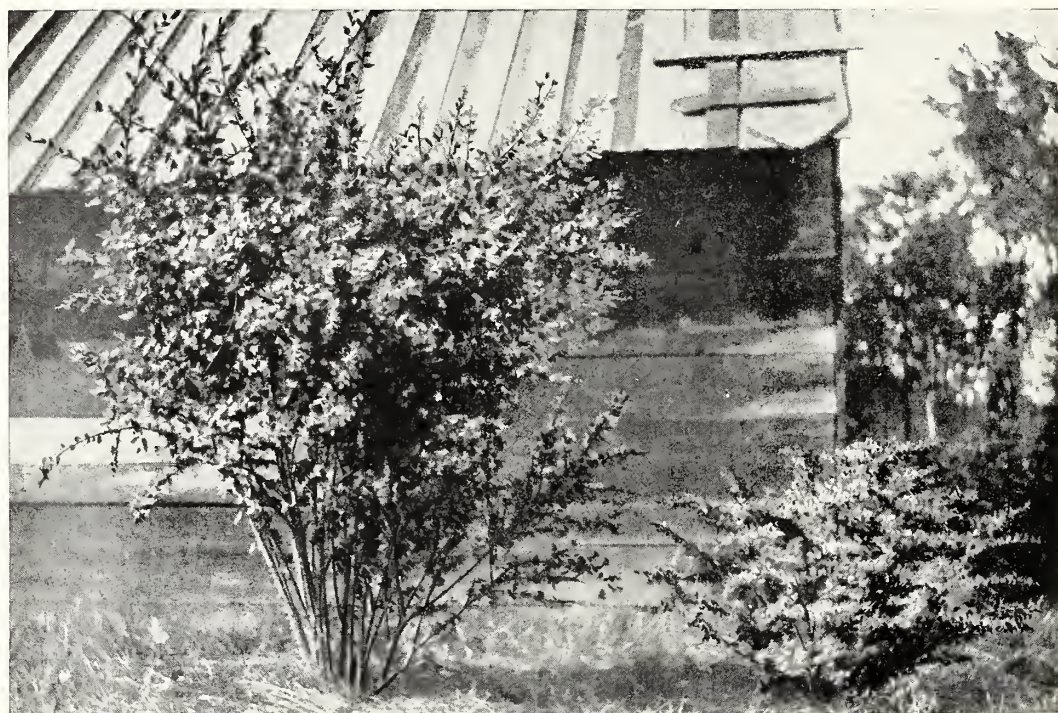
Black Stem Rust

spreads from Common Barberry Bushes
to Wheat, Oats, Barley, Rye and many
Grasses



Black stem rust of small grains is caused by a tiny parasitic plant. In the Northern States it lives for a time each spring on the leaves of common barberry bushes. The dust-like spores of the rust are spread by the wind for miles from barberry bushes to grain fields and from one grain field to another. Warm, moist weather aids the rapid development and spread of stem rust, just as the growth of corn, wheat, or other crops is affected by favorable weather conditions. Destroy common barberry bushes and reduce losses from stem rust.

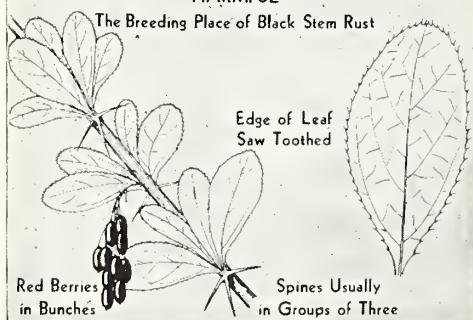
Learn to Know Common Barberry



COMMON BARBERRY

HARMFUL

The Breeding Place of Black Stem Rust



Red Berries
in Bunches

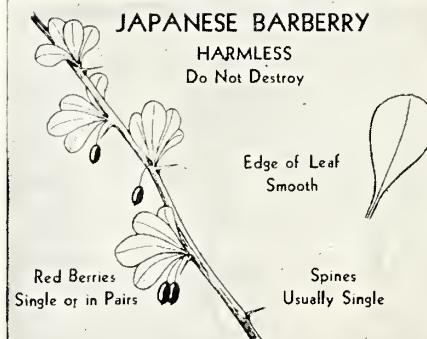
Edge of Leaf
Saw Toothed

Spines Usually
in Groups of Three

JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Red Berries
Single or in Pairs

Edge of Leaf
Smooth

Spines
Usually Single

Report common barberry bushes you may find, to the Barberry Eradication Office in your State, your Agricultural College, your State Department of Agriculture, or the Barberry Eradication Office, United States Department of Agriculture, Washington, D.C.

Fillmore than in any other county in Minnesota. Large numbers of bushes were found and treated with salt during the resurvey of this county.

Again in 1930 the necessity of searching for common barberry in every place where a shrub can grow was clearly demonstrated. Isolated bushes were found in large woodlots in the counties where the intensive survey was conducted. This also was true in the counties covered by resurvey. In Mower County common barberry bushes were found growing along fence rows. These bushes had developed from seeds of old bushes which had been eradicated eight years ago. Near Lanesboro, in Fillmore County, escaped barberry bushes were found growing in rocks, on sides of cliffs, in woods, and in many other unusual places.

The following table shows the number of bushes found in these counties:

No. town- County ships surveyed	New props. having bushes	Planted bushes	Escaped bushes	Seed- lings	Sprtg. bushes	Total, all bushes and seedlings	% county surveyed
<u>1930 Intensive Survey</u>							
Dakota 16	49	109	677	234	63	1,083	75
Rice 4	9	10	32	6	8	56	25
Scott 6	5	4	41	75	0	120	55
TOTAL 26	63	123	750	315	71	1,259	
<u>Resurvey</u>							
Fillmore 18	37	1	939	1515	144	2,599	75
Mower 20	9	2	25	2	32	61	100
TOTAL 38	46	3	964	1517	176	2,660	175

Eradication

Most of the common barberries found in Minnesota during 1930 were treated with salt. Where near-by valuable plants might be injured by salt, barberry bushes were dug. A total of 2,050 bushes, sprouting bushes, and seedlings was treated as compared with 1,987 bushes, sprouting bushes, and seedlings dug.

Educational Activities

The educational activities during 1930 were directed along several lines. During May and June talks on barberry eradication and the rust control problem were given before approximately 2,790 township chairmen, mayors, county commissioners, county agents, etc. at 106 weed conferences in 76 counties. The boys and girls of the 4-H clubs responded very well as a result of demonstrations made at their summer camps. Members of the clubs found six locations of common barberry during 1930. School children also were a help in finding barberry bushes. Every school in Goodhue County was visited and the children told about the relation of common barberry to black stem rust. As a result pupils in these schools reported more than 39 locations having 133 common barberry bushes.

One of the chief methods used to enlist the aid of boys and girls was the presentation of a bronze medal to the boy or girl finding a heretofore unknown location of common barberry. The winning of a medal of this kind automatically made these children life members of the National Rust Busters Club, an organization sponsored by the Conference for the Prevention of Grain Rust. Sixty medals have been awarded in Minnesota this year. Nineteen were awarded to children in one school in Goodhue County.

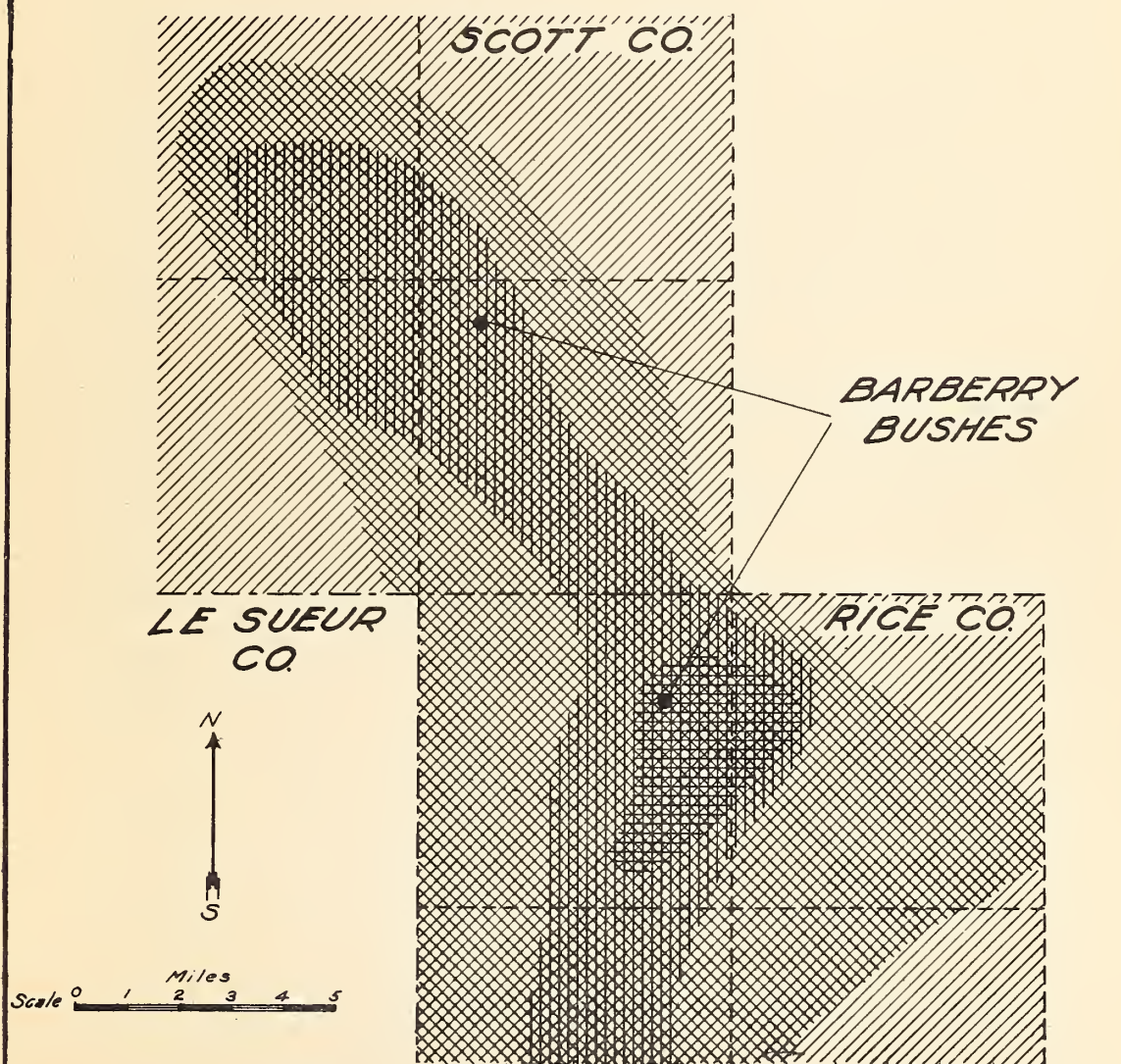
Another method used to enlist the interest of school children in the story of the relation of common barberry to black stem rust is the school essay contests sponsored by the county and State fair associations of Minnesota. A large number of boys and girls competed in this contest during 1930.

Publicity Activities

The fine cooperation of the newspapers and other publicity agencies has aided materially in arousing the interest of the public in survey and educational activities. The field agents are more successful in their search for common barberry bushes when the people in the county have read news articles concerning the type of work being con-

STEM RUST SPREADS FROM COMMON BARBERRY TO GRAINS AND GRASSES

RICE AND SCOTT COUNTIES, MINNESOTA,
JULY, 1930.



DEGREES OF INFECTION

B.E. 1455

Trace Light Moderate Heavy

ducted. In many instances property owners awaited the arrival of the field agents to learn whether or not some of the shrubs on their property were common barberry.

The fine cooperation the publications section of the Minnesota Agricultural Extension News Service and their associated newspapers throughout the State has proved exceptionally helpful in getting facts regarding the campaign before the public.

Stem Rust Observations

The annual accumulation of data pertaining to the occurrence and spread of stem rust is important. Often heavy local epidemics of rust lead to the finding of infected barberry bushes. It often is found that previous to the time common barberry bushes are found, there have been local epidemics of stem rust occurring each year. The exact relationship existing between rust spread areas and the presence of barberry bushes is being studied.

During the year 1930 stem rust data were collected in connection with the regular field duties. Where barberry bushes were found an examination of near-by grains and grasses was made to determine whether stem rust was spreading from them. During the past season 17 locations were found where stem rust spreads were directly traceable to common barberry. From two of these locations in Rice and Scott Counties stem rust had spread over an area of eight townships. These two areas coalesced, making one continuous stem rust spread which covered an area of approximately 150 square miles.

Besides observing the spread of stem rust from common barberry bushes, general field observations and rust collections were made. These data are compiled and recorded for future reference, and in cases where severe local epidemics recur an organized attempt is made to locate the source of the infection.

All Known Methods of Rust Control Must be Employed

To reduce losses from black stem rust other methods of controlling this disease should be given consideration.

Besides the eradication of common barberry, better cultural methods should be employed. These include the early sowing of spring grain, proper preparation of the seed bed, avoidance of low, poorly drained land, proper use of fertilizers, in fact everything that will promote early ripening of the grain. The plant breeders have made progress toward the production of stem-rust-resistant varieties of grains. If these grains can be utilized to advantage in certain localities, they should be grown in preference to varieties susceptible to stem rust.

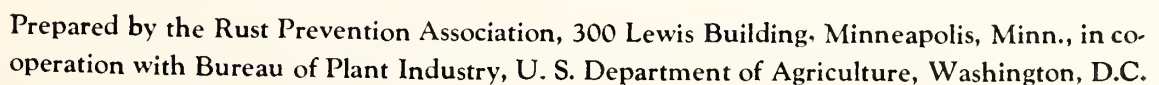
Cooperation

The success of a campaign depends upon the united efforts of interested individuals. Considerable aid of various kinds is given by the following agencies: the State Department of Agriculture, through its weed and nursery inspectors; the University of Minnesota, through its Extension and Plant Pathology Division, and the various State educational organizations. The Conference for the Prevention of Grain Rust, an organization of business men and groups interested in stem rust control, gives valuable aid to the barberry eradication campaign through educational and publicity activities.

Future Problems

To find and destroy the last common barberry bush is the goal of the barberry eradication campaign in Minnesota. The immediate problem is to complete the intensive survey of southeastern Minnesota, where escaped barberry bushes are common. This program should be pushed as rapidly as a thorough job of survey and eradication will permit. These areas, already covered by the intensive survey, must be watched closely for seedlings which may develop from seeds produced by bushes previously eradicated. This is especially important from the standpoint of preventing the development of new local sources of stem rust. To free the grain-growing areas of all barberry bushes is an important crop sanitation measure. If this is to be done, the aid of every man, woman, and child must be enlisted in finding and reporting common barberry bushes.

A black and white photograph showing a young, bushy plant seedling growing in a sandy, open area. The plant has several upright stems with small, dark, lanceolate leaves. The ground is light-colored and sandy, with some scattered debris and other small plants visible in the background.

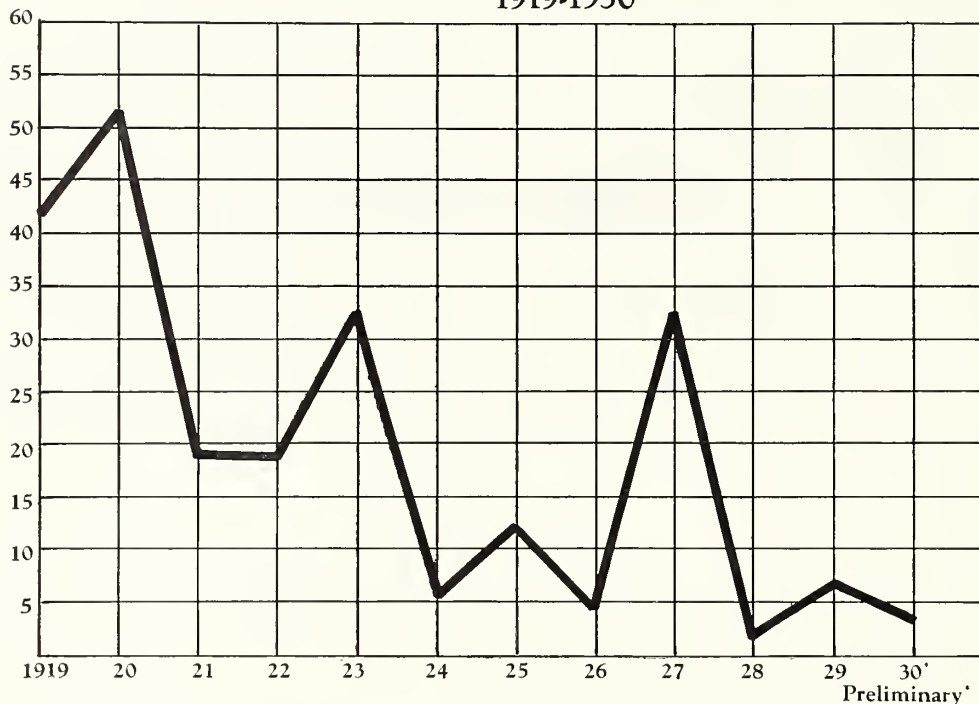
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Barberry Eradication Pays

In Millions
of Bushels

Wheat losses in Barberry Eradication Area

1919-1930



The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided in this reduction.

57,704,000
bushels of wheat

Average annual loss
five-year period
1916-1920

17,867,000
bushels of wheat

Average annual loss
five-year period
1921-1925

9,609,000
bushels of wheat

Average annual loss
five-year period
1926-1930

**Millions of bushels of oats, barley and rye also are
damaged each year by black stem rust**

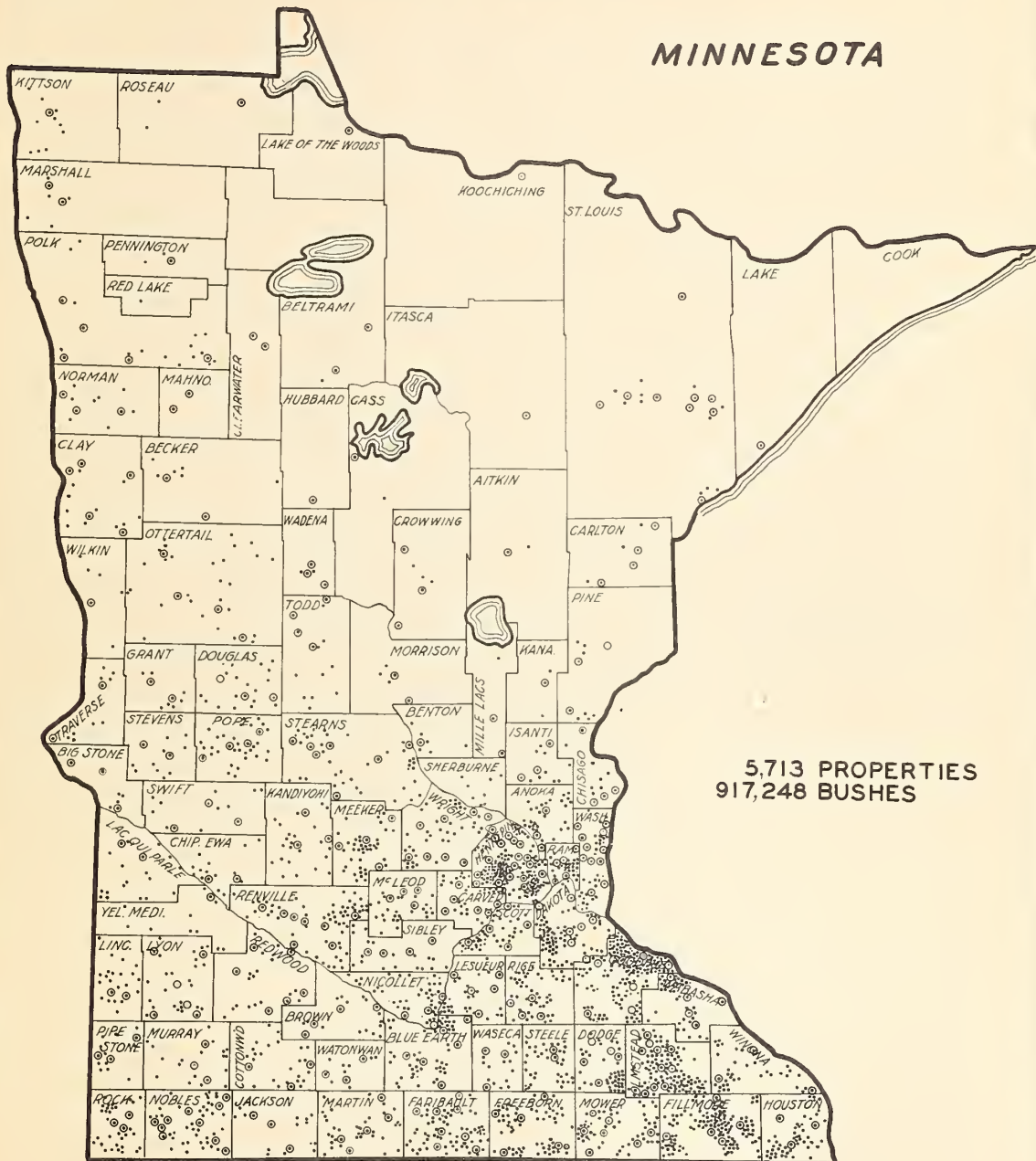
Rust shriveled grain always is discounted

**Destroy all Common Barberries—Reduce Losses from Stem Rust.
Receive the Highest Available Price for Grain.**

Report all common barberry bushes found to the Office of Barberry Eradication, University Farm, St. Paul, Minnesota. This service will aid materially in the fight to control black stem rust, the most destructive disease of wheat, oats, barley, and rye.

PROPERTIES HAVING BARBERRY BUSHES 1918-1930

MINNESOTA



- FARMS HAVING BARBERRY BUSHES
- TOWNS HAVING BARBERRY BUSHES

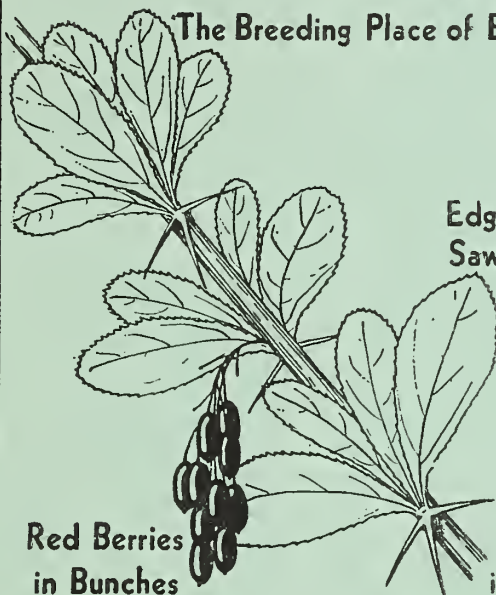
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Common Barberry Spreads Black Stem Rust

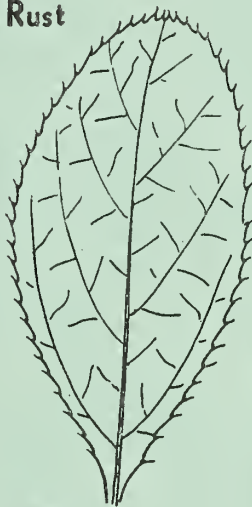
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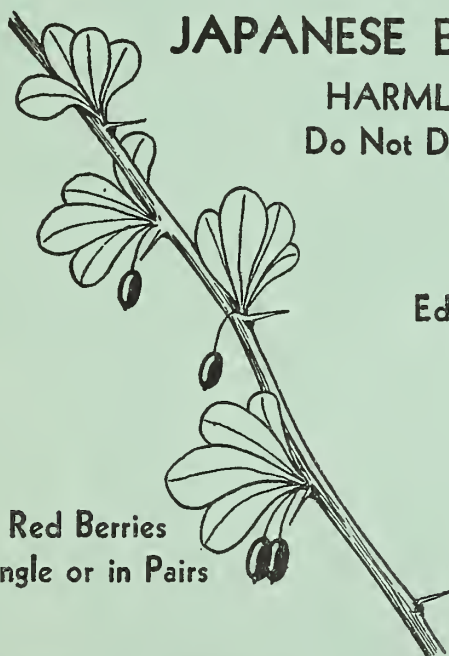
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Red Berries
Single or in Pairs

Edge of Leaf
Smooth



Spines
Usually Single

Look For and Report All Common Barberry Bushes
To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.

Common Barberry Bushes

spread

Black Stem Rust

to

WHEAT, OATS,
BARLEY, RYE,
and Many Wild
Grasses

THIS Progress Report is prepared and printed by the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. The cover is furnished by the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minnesota.